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(54) **TOOL FOR ATTACHING A CABLE  
CONNECTOR TO A CABLE**

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See application file for complete search history.

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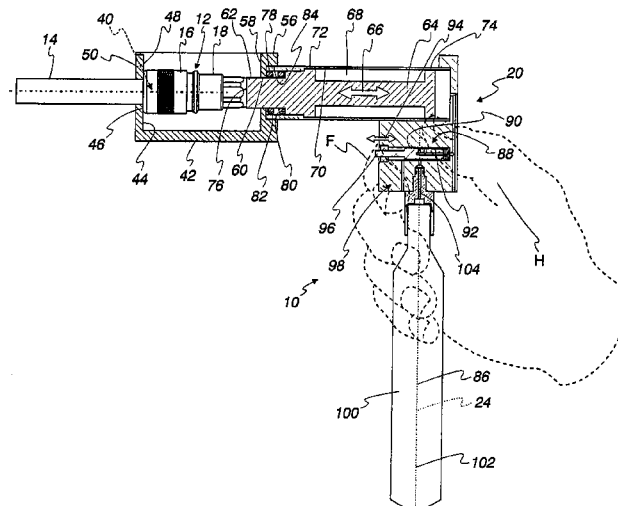
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(57) **ABSTRACT**

A tool for changing first and second parts of a connector from  
a pre-assembly relationship into an assembled relationship.  
The tool is portable and has a frame with an operating mecha-  
nism thereon. The operating mechanism has a plunger that is  
movable to thereby change the relationship of the connector  
parts. The operating mechanism is operable by a pressurized  
fluid within a container that is connected to the frame.

**16 Claims, 7 Drawing Sheets**



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Fig. 1

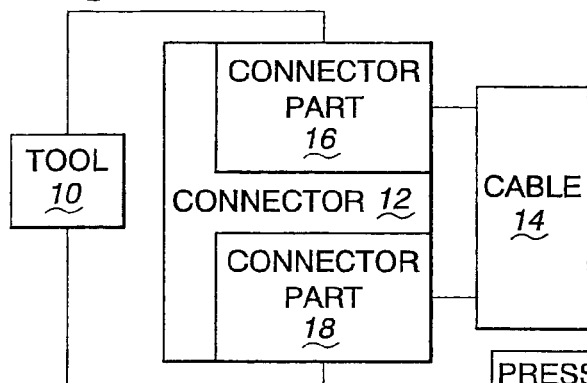


Fig. 2

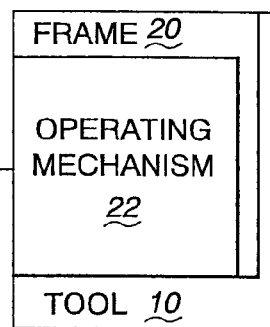
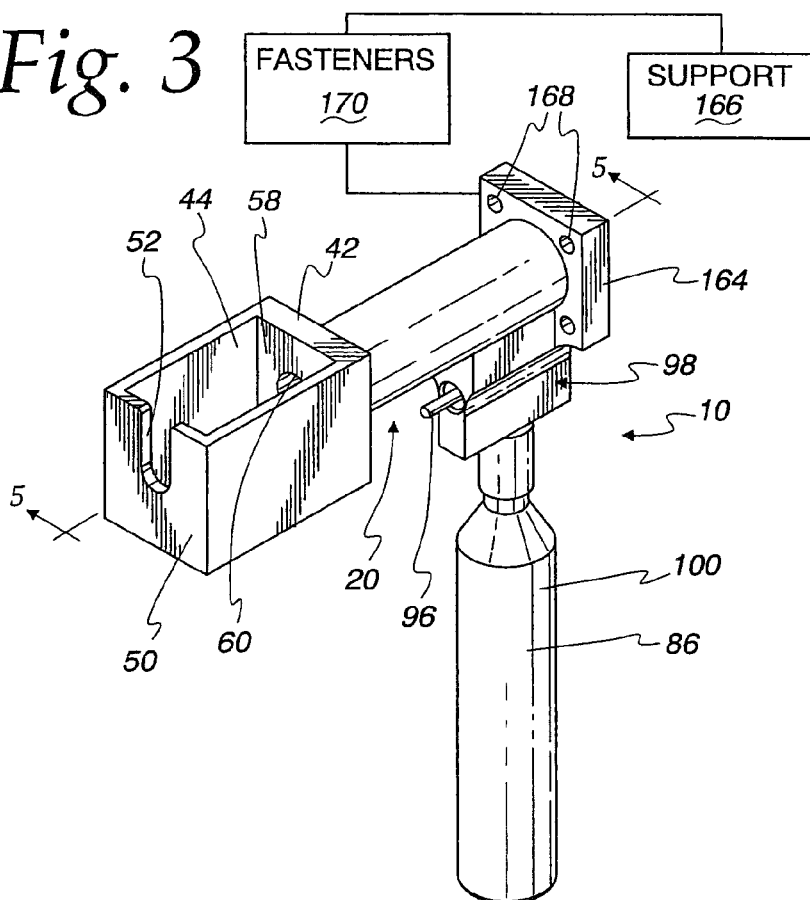
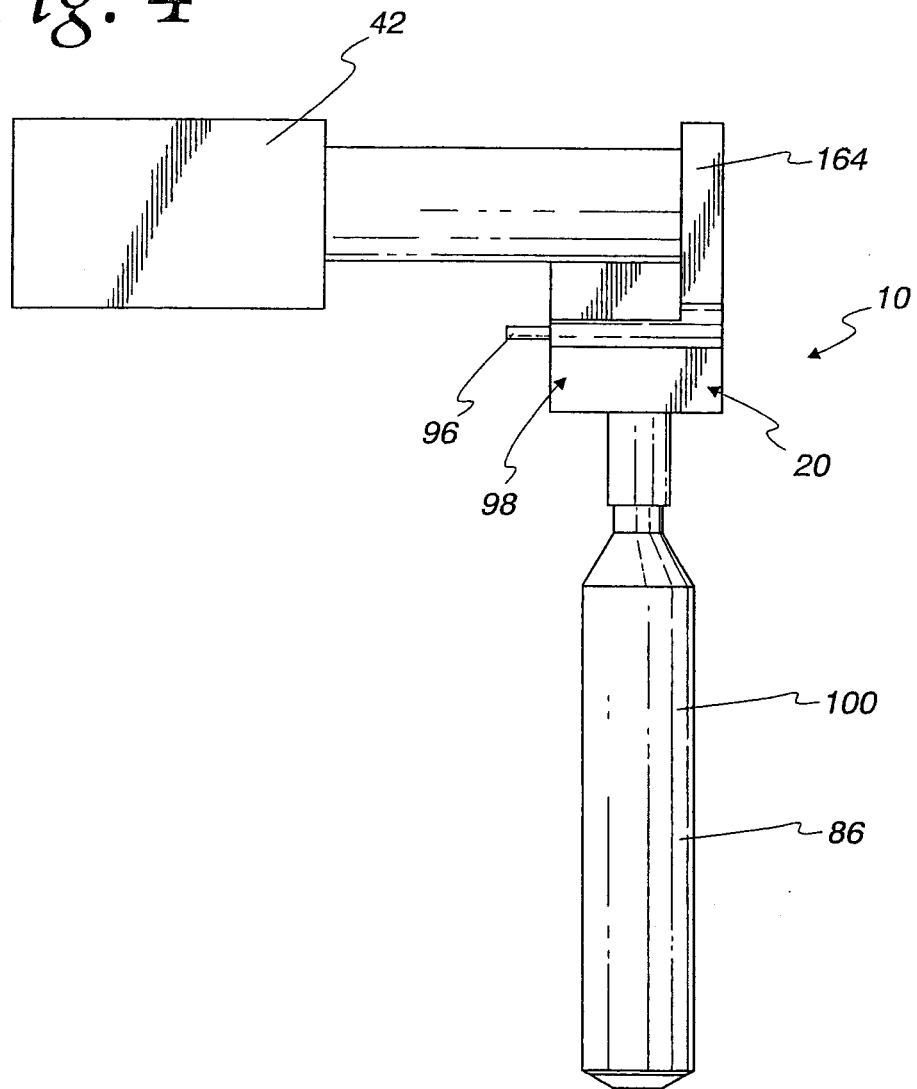


Fig. 3



*Fig. 4*





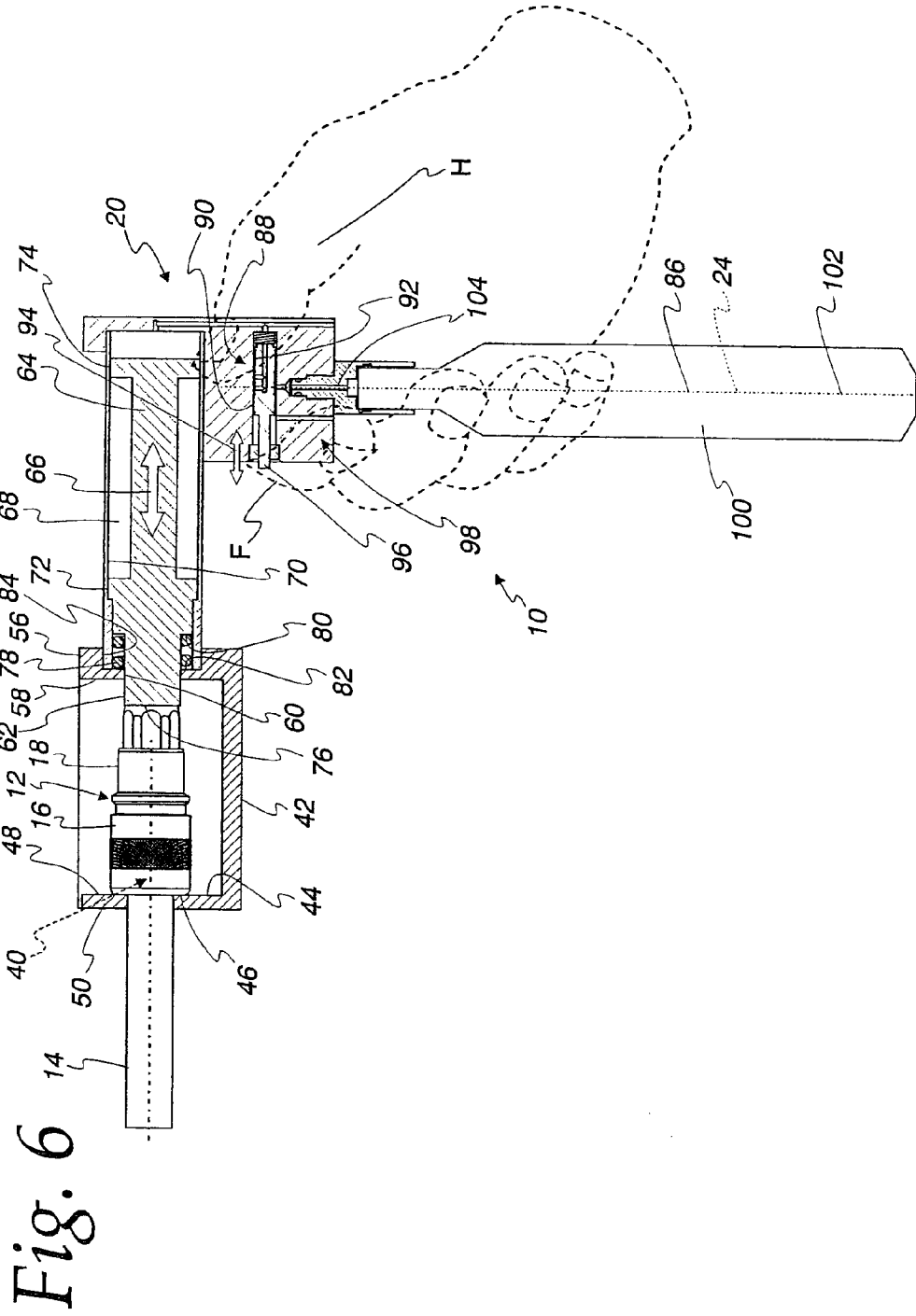


Fig. 7

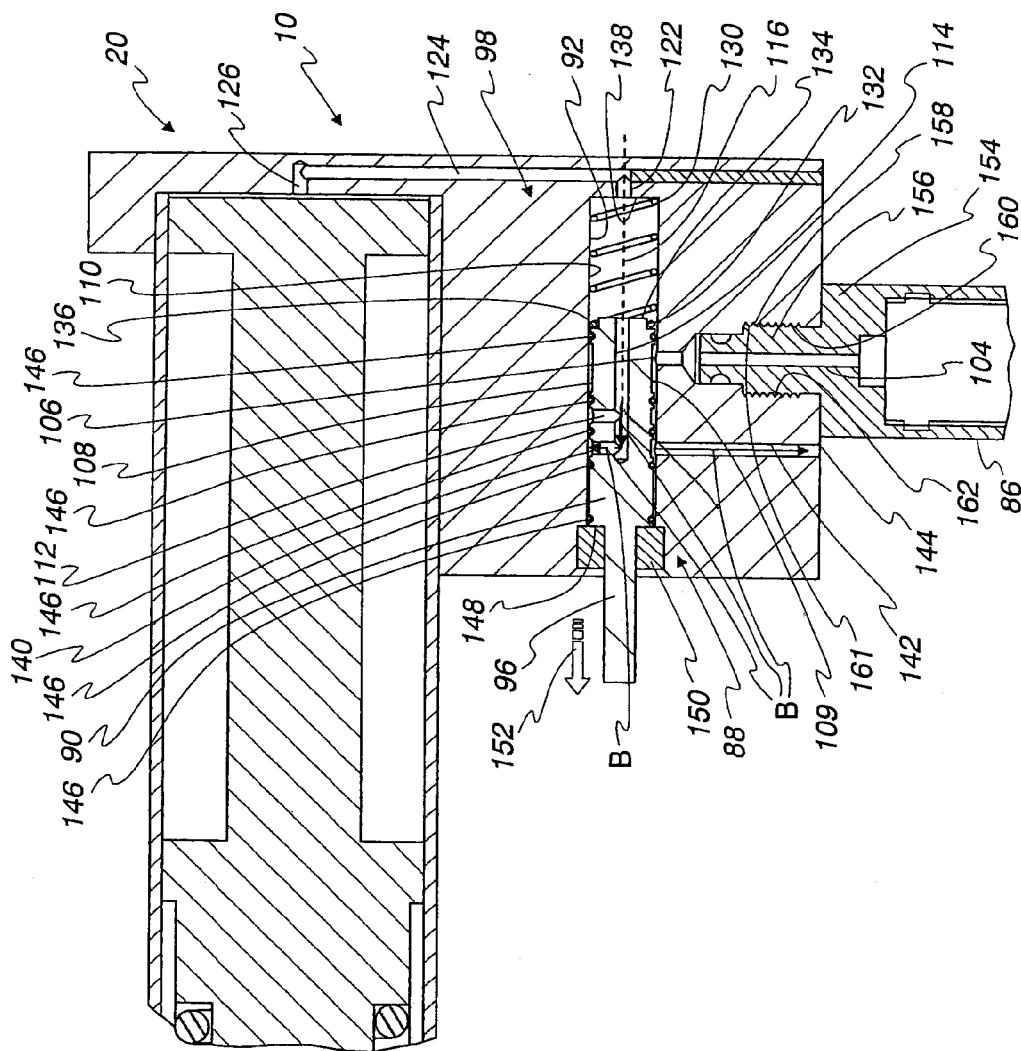


Fig. 8

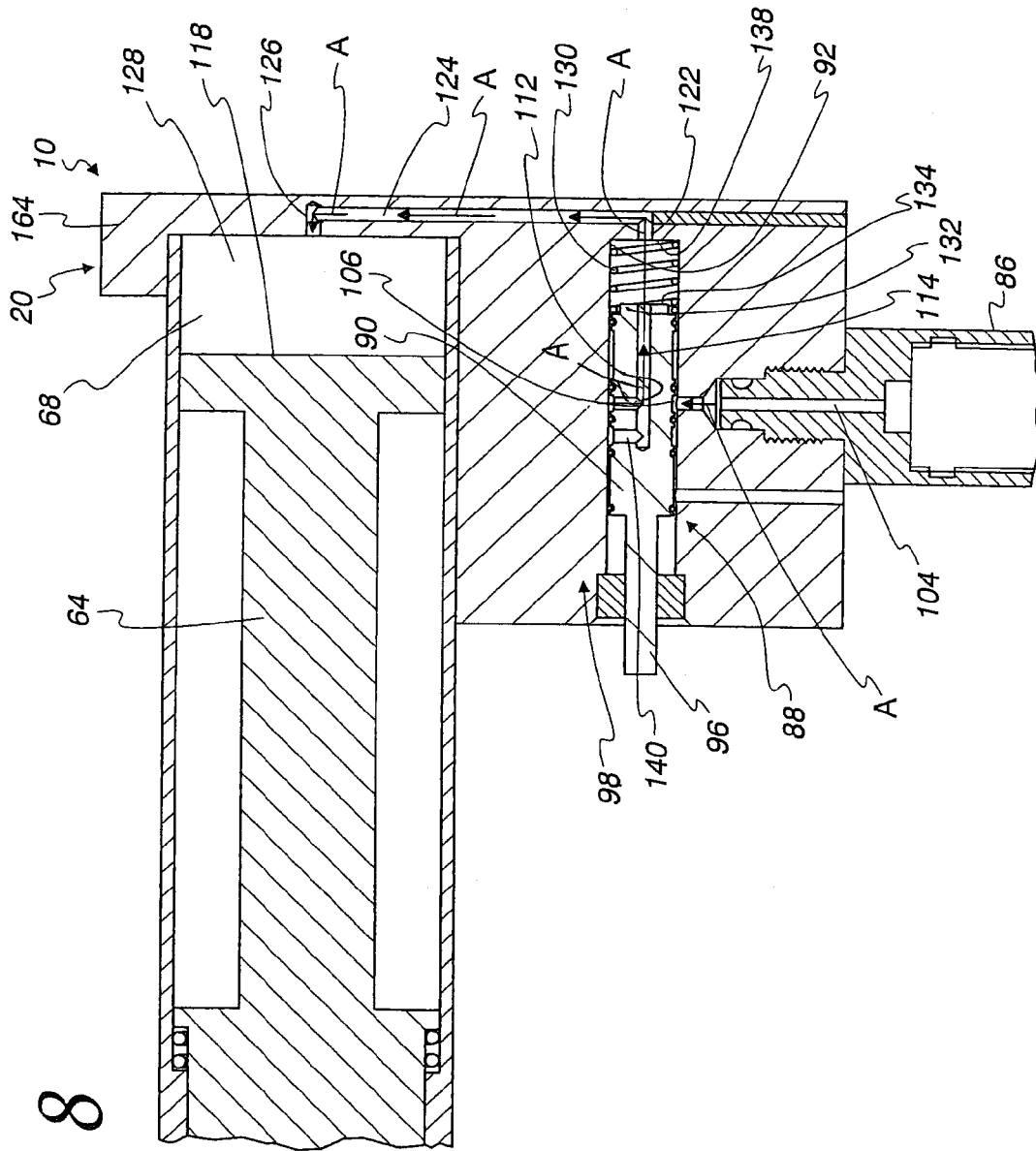


Fig. 9

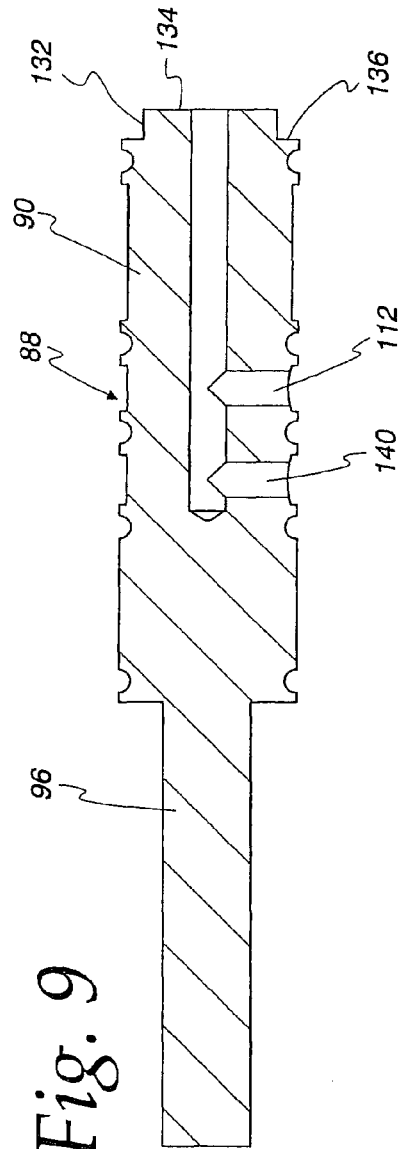
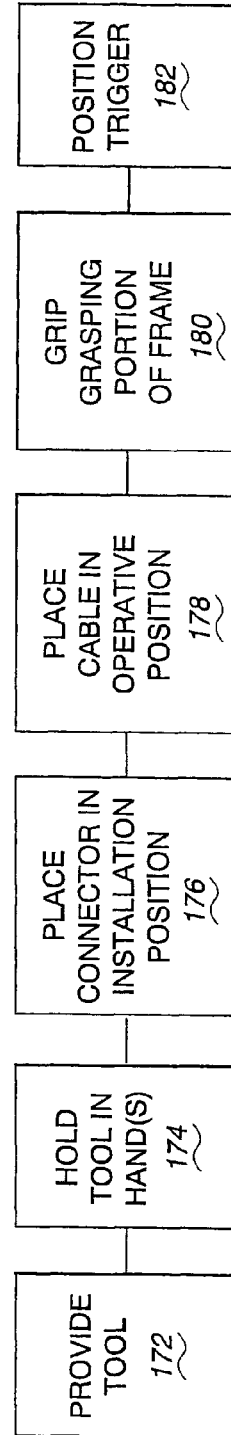


Fig. 10



## TOOL FOR ATTACHING A CABLE CONNECTOR TO A CABLE

### CROSS REFERENCE TO RELATED APPLICATIONS

This continuing application claims priority to U.S. patent application Ser. No. 13/077,632 filed Mar. 31, 2011 which continuing application claims priority to a U.S. patent application Ser. No. 11/900,104 filed Sep. 10, 2007 and issued on Apr. 12, 2011 as U.S. Pat. No. 7,921,549 with the United States Patent and Trademark Office.

This application is related to the following commonly-owned, co-pending patent applications: (a) U.S. patent application Ser. No. 13/041,257, filed on Mar. 4, 2011; (b) U.S. patent application Ser. No. 13/869,295, filed on Apr. 24, 2013; (c) U.S. patent application Ser. No. 13/869,372, filed on Apr. 24, 2013; and (d) U.S. patent application Ser. No. 13/868,636, filed on Apr. 24, 2013.

### FIELD OF THE TECHNOLOGY

This invention relates to connectors for cable, such as coaxial cable and, more particularly, to a compression tool for operatively attaching a connector to the cable. The invention is also directed to a method of using such a compression tool.

### BACKGROUND

Connectors are operatively attached to cables used for a multitude of purposes in many different environments. A particularly high volume of such connectors is attached to coaxial cable for its various applications. The coaxial cable may be sold with pre-attached connectors, thereby requiring connector attaching tools at a cable manufacturing facility, or a separate facility at which the cable is staged for attachment of the connectors. These tools must be capable of consistently and reliably attaching the connectors on a high volume basis. Stationary, non-portable tools may be provided for this purpose, as shown for example in U.S. Pat. No. 6,116,069, to Holliday. Since portability is not a concern, tools of this type can be made with high strength, and potentially heavy, components with the ability to produce a large compressive attaching force, as in a direction parallel to the cable length, between connector parts.

More commonly, cable is cut to length and connectors attached thereto in the field. This process may be carried out by a homeowner, but is performed on a much greater volume by professionals that move from site to site to effect repairs and/or installations of equipment requiring coaxial cable connection.

Portable compression and crimping tools used for this purpose are available with different capacity and quality. A homeowner may purchase such a tool, adequate to meet limited demands, relatively inexpensively. Tools of this type are generally constructed with mechanical components that rely upon the application of a significant gripping force by a user for their successful operation. The nature and quality of the connection is dictated by the particular application force produced through this gripping action. Inconsistent force application may result in connections with different integrity. It may be impossible for certain individuals to reliably generate a force of sufficient magnitude that will adequately maintain the attachment of certain connectors to a cable. Users with the requisite hand strength may eventually suffer from fatigue after repeated use of the tools, whereby the quality of the connections may eventually suffer. Such basic tools thus

become impractical for professional users that may be required to attach a multitude of connectors in the course of a day.

While higher end tools with greater mechanical advantage are available to professionals, a number of the above problems still persist. Failed or compromised connections can have a significant financial impact on a business if experienced in any significant volume. In the highly competitive cable industry, where margins for installations are relatively small, such failures not only necessitate follow up visits and repairs, but may also significantly impact the reputation of the installing company.

The above problems are aggravated by the fact that many new types of connectors are requiring even greater attaching forces, particularly those that must be attached using compression tools that exert compressive forces aligned lengthwise/axially with respect to the cable. So long as the integrity of the connector attachment depends upon the degree of force applied by the user, and the available tools permit inconsistent force application, the above problems, particularly inconsistent quality and user fatigue, will persist.

Tools for attaching cable connectors, that are operable using mechanical assistance, are known. It is known to apply connecting forces hydraulically or pneumatically on equipment at a fixed location in a manufacturing facility, as seen for example in U.S. Pat. No. 6,116,069, to Holliday.

It is also known to hydraulically and pneumatically drive crimping tool components on units that are portable in nature to exert radial crimping forces on connectors, as shown for example in U.S. Pat. No. 4,774,762, to Gobeil. This tool is limited to producing radial crimping forces and is also relatively complicated in nature. This makes this type of equipment generally expensive and prone to failure. It may thus be impractical for use on a high volume basis for on site installations.

In spite of its maturity, the industry has not developed a feasible compression tool construction that mechanically assists the application of axial connecting forces and has a geometry that makes transportation thereof and on site use practical on a high volume basis. Thus, for on site applications, the industry has continued to use the basic hand held tool that relies solely upon forces generated by a user's hand(s).

### SUMMARY

The invention consists of a tool for connecting a coaxial cable connector to a coaxial cable. The coaxial cable connector has a central axis and first and second parts that are movable relative to each other along the central axis of the connector between: i) a pre-assembly relationship; and ii) an assembled relationship. The tool has a frame defining a receptacle for the connector with the connector in an installation position and a part of the cable placed in an operative position with respect to the connector. An operating mechanism on the frame has a plunger that is movable between a first position and a second position to thereby change the first and second parts of the connector in the installation position from the pre-assembly relationship into the assembled relationship. The operating mechanism is actuated by a pressurized fluid from a container removably connected to the frame.

In one form, the tool is provided in combination with a container for a supply of pressurized fluid that is removably connected to the frame.

In one form, the frame defines a grasping portion that can be gripped in the hand of a user to hold the tool for operation and an operator having a part that can be repositioned from a

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first position towards a second position to thereby release fluid from the pressurized supply to cause the plunger to be moved from its first position towards its second position.

In one form, the part is in the form of a trigger that is translated along a line between its first and second positions. The trigger is operable by a finger of a user on a hand that is gripping the grasping portion of the frame.

In one form, the frame defines a chamber within which the plunger is guided in movement along a first line between its first and second positions and the frame defines a fluid flow path between a pressurized supply of the fluid and a force applying end on the plunger.

In one form, the operating mechanism further has a valve assembly that controls passage of fluid from a pressurized supply of the fluid to the force applying end of the plunger.

In one form, the tool is provided in combination with a container for a supply of pressurized fluid that is air. The container is removably connected to the frame.

In one form, the valve assembly has a valve element that is movable between a flow blocking position and a flow passage position. The valve element is movable by a user through a trigger that is engagable and repositionable by a user to thereby move the valve element from the flow blocking position into the flow passage position.

In one form, the trigger moves as one piece with the valve element.

In one form, the valve element is translatable between the flow blocking and flow passage positions along a second line that is substantially parallel to and spaced from the first line.

In one form, the frame defines a grasping portion that can be gripped in a hand of a user to hold the tool for operation. The trigger is situated to be operable by a finger of a user on a hand that is gripping the grasping portion of the housing.

In one form, the tool is provided in combination with a pressurized supply of fluid that is in a container removably attached to the frame. The container has a cylindrical outer wall with a central axis that is transverse to the first and second lines. The container is configured so that a hand of a user gripping the grasping portion of the frame can be extended at least partially around at least a portion of the cylindrical outer wall of the container.

In one form, the frame and container cooperatively define an "L" shape.

In one form, the frame defines an exhaust passage in communication with the fluid flow path with the valve element in the flow blocking position to allow discharge of fluid in the fluid flow path and thereby reduction in pressure of fluid in the fluid flow path.

In one form, with the valve element in the flow blocking position, the plunger is biasably urged into the first position.

In one form, the frame defines an inlet port for pressurized fluid from a supply. The valve element has a body with a central axis substantially parallel to the first line. The body has a main passage that defines a part of the fluid flow path extending along the central axis of the body and first and second feeder passages spaced along the central axis of the body. With the valve element in the flow blocking position, the first feeder passage communicates between the exhaust passage and the main passage of the body and the body blocks communication of pressurized fluid between the inlet port to the fluid flow path. With the valve element in the flow passage position, the second feeder passage communicates between the inlet port and the main passage and the valve body blocks communication of fluid in the fluid flow path to the exhaust passage.

In one form, there are threaded connector parts on the frame and container that cooperate to allow the container and

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frame to be relatively moved to selectively engage and disengage threads on the connector parts.

In another form, a tool for attaching a connector to a cable is provided. The tool has a frame and an operating mechanism on the frame that is operable by a pressurized fluid. The tool has a size and weight to be held by and transported in the hands of a user. The frame defines a receptacle for a connector with a first backing surface facing in a first direction and against which a connector can be placed with a cable in an operative position with respect to the connector. The operating mechanism has a plunger that is movable between a first position and a second position. The plunger is moved towards the backing surface and oppositely to the first direction as the plunger moves from the first position towards the second position. The frame defines a grasping portion that can be gripped in the hand of a user to hold the tool for operation. The tool further has an operator with a part that can be repositioned from a first position towards a second position to thereby release pressure from a pressurized source to cause the plunger to be moved from the first position into the second position.

In one form, the part is a trigger that is operable by a finger of a user on a hand that is gripping the grasping portion of the housing.

In one form, the combination further includes a supply of pressurized fluid that is attached to the frame. The supply of pressurized fluid includes a container that is removably connected to the frame.

In one form, the fluid is air.

In one form, the container has a cylindrical outer wall. The container is configured so that a hand of a user gripping the grasping portion of the housing can be extended at least partially around at least a portion of the cylindrical outer wall of the container.

In one form, the frame and container cooperatively define an "L" shape.

In another form, a tool for attaching a connector to a cable is provided. The tool has a frame and an operating mechanism on the frame that is operable by a pressurized fluid. The tool has a size and weight to be held by and transported in the hands of a user. The frame has structure for receiving a connector with a cable in an operative position with respect to the connector. The operating mechanism has a plunger structure for exerting a compressive force upon a connector at the receiving structure and structure for selectively: a) causing delivery of pressurized fluid from a pressurized fluid supply to cause the plunger structure to exert a compressive force upon a connector at the receiving structure; and b) blocking delivery of pressurized fluid from a pressurized fluid supply in a manner whereby the plunger structure does not exert a compressive force upon a connector at the receiving structure.

In one form, the tool further has structure attached to the frame for containing a supply of a pressurized fluid for operating the operating mechanism.

The invention is further directed to a method of operatively attaching a connector to a cable. The connector has a central axis and first and second parts that are movable relative to each other along the central axis of the connector between: i) a pre-assembly relationship; and ii) an assembled relationship. The method includes the steps of: providing a tool having a frame and an operating mechanism that is operable by a pressurized fluid, with the frame having a grasping portion; placing the connector in an installation position within a receptacle on the frame; placing a part of the cable in an operative position with respect to the connector; gripping the grasping portion of the frame; and with a finger on the one hand that is gripping the grasping portion of the frame, repositioning the connector to the assembled relationship.

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sitioning a trigger on the operating mechanism to thereby cause delivery of pressurized fluid that causes a plunger to relatively move the first and second connector parts from the pre-assembly relationship into the assembled relationship.

In one form, the method includes the step of placing a container with a pressurized supply of fluid upon the frame to follow movement of the frame.

In one form, the method includes the step of extending the user's one hand at least partially around the container with the one hand extended around the grasping portion of the frame.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic representation of a combination of a cable, a connector capable of being operably attached to the cable and including relatively moveable first and second parts, and a tool, according to the invention, for changing the first and second connector parts from a pre-assembly relationship into an assembled relationship to cause the connector to be maintained operatively attached to the cable;

FIG. 2 is a schematic representation of the tool with a supply of pressurized fluid through which it is operated;

FIG. 3 is a perspective view of one form of tool, according to the present invention, and as schematically depicted in FIGS. 1 and 2;

FIG. 4 is a side elevation view of the tool in FIG. 3;

FIG. 5 is a cross-sectional view of the tool taken along line 5-5 of FIG. 3 with the cable in an operative position with respect to the connector, the connector in an installation position on the tool, and the connector parts in the pre-assembly relationship;

FIG. 6 is a view as in FIG. 5 wherein the tool is operated to change the connector parts into the assembled relationship;

FIG. 7 is an enlarged, fragmentary view of the tool in cross section as in FIG. 5 and in a state corresponding to that shown in FIG. 5;

FIG. 8 is an enlarged, fragmentary view of the tool in cross section as in FIG. 5 and in a state corresponding to that shown in FIG. 6;

FIG. 9 is an enlarged, elevation view of a valve element on the tool in FIGS. 3-9; and

FIG. 10 is a flow diagram representation of a method for operatively attaching a connector to a cable, according to the present invention.

#### DETAILED DESCRIPTION

Referring initially to FIG. 1, a tool, according to the present invention, is shown at 10 for attaching a connector 12 to a cable 14. More specifically, the tool 10 changes the relationship of first and second connector parts 16, 18, making up the connector 12, thereby to maintain the connector 12 operatively attached to the cable 14. The system shown in FIG. 1 is depicted schematically since the inventive tool 10 can be used in conjunction with connectors 12 taking a wide range of different forms.

Additionally, the tool 10 is shown in schematic form in FIG. 2 in that the components making up the tool 10 can vary significantly from the preferred form, as described hereinbelow. The schematic representation of each of the system in FIG. 1 and tool 10 in FIG. 2 is intended to encompass all variations that would be obvious from the teachings herein to one skilled in the art.

As shown in FIG. 2, the tool 10 has a frame 20 into which an operating mechanism 22 is integrated. The operating mechanism 22 is operated/actuated by a pressurized fluid 24 that may be liquid and more preferably a gas, such as com-

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pressed air. A preferred form of the tool 10 will now be described with respect to FIGS. 3-9.

The tool 10 is particularly suitable for operatively attaching the connector 12 to a coaxial cable 14 (FIGS. 5 and 6). The cable 14 has a length in the direction of the double-headed arrow 30 and a lengthwise central axis 32.

The connector 12 has a central axis 34 that is coincident with the axis 32 of the cable 14 with the connector 12 operatively attached to the cable 14 as in FIGS. 5 and 6. The first and second connector parts 16, 18, that make up the connector 12, are moveable relative to each other along the central axis 34 between a pre-assembly relationship, as shown in FIG. 5, and an assembled relationship, as shown in FIG. 6. Many different constructions for the connector 12 and its associated parts 16, 18 can be operably attachable to a cable using the tool 10. What is preferred is that the connector parts 16, 18, regardless of their form, be operatively attached to a cable by being repositioned axially towards each other, as indicated by the arrows 36, 38 in FIG. 5. As this occurs, a free end part 40 of the cable 14, that is axially overlapping with the connector 12 and resides within a portion thereof in an operative position, becomes firmly, fixedly held by the connector parts 16, 18, which are likewise fixed with respect to each other. The connector parts 16, 18 may be made with a corrugated or non-corrugated wall construction. One exemplary form of connector is shown in U.S. Pat. No. 6,153,830, the disclosure of which is incorporated herein by referenced.

The frame 20 has a squared component 42 defining a receptacle 44 in which one connector end 46 can bear against a backing surface 48 bounding the receptacle 44. The squared component 42 defines a means for receiving the connector 12 with the cable 14 in an operative position with respect thereto. The backing surface 48 is defined on a wall 50 that has a U-shaped cutout 52 to accept the diameter of the cable 14, whereby the connector 12 can be directed into the receptacle 14 and into the installation position shown in FIGS. 5 and 6.

The connector end 54, axially opposite to the connector end 46, is located adjacent to a wall 56 on the component 42, and more particularly in close proximity to a surface 58 thereon and facing oppositely to the backing surface 48.

The wall 56 has a through bore 60 through which a reduced diameter end 62 of a plunger 64, that is part of a plunger assembly, is moved along a first line as indicated by the double-headed arrow 66 in FIG. 6. The plunger assembly and squared component 42 together define a means for exerting a compressive force upon the connector 12. The plunger assembly could be made from multiple components, moving with or separately from the plunger 64, consistent with the teachings herein. The plunger 64 resides in a chamber 68 within the frame 20 bounded by an annular wall 70. The plunger 64 is generally "barbell"-shaped for weight reduction, with axially spaced, annular surfaces 72, 74 engaged with the annular wall 70 for guided movement thereagainst.

The plunger 64 is movable between a first position, as shown in FIG. 5, and a second position, as shown in FIG. 6. As an incident of this movement, a free end 76 of the plunger 64 moves correspondingly to axially compress the connector 12 against the backing surface 48, thereby to change the connector parts 16, 18 from their pre-assembly relationship into their assembled relationship. This causes the connector 12 to be maintained operatively attached to the cable 14.

The plunger 64 is normally biasably urged towards its first position. This is accomplished by interposing a compression coil spring 78 between an annular, axially facing shoulder 80 on the plunger 64 and a facing shoulder 82 formed by an annular undercut 84 on the wall 56. The coil spring 78 surrounds the reduced diameter end 62 of the plunger 64.

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The operating mechanism **22**, as previously noted, is actuated/operated by the pressurized fluid **24** from a supply thereof that may be separate from, or integrated into, the frame **20**. In a preferred form, a supply of the pressurized fluid **24** is provided in a container **86** that is removably connected to the frame **20** and is transportable with the frame **20** as one unit. The container **86** is one exemplary form of a means for containing a pressurized supply of fluid to operate the tool operating mechanism **22**.

The actuation/operation of the tool **10** through the pressurized fluid **24** is effected through an operator/valve assembly **88** consisting of a valve element **90**. The operator/valve assembly **88** and the flow network for guiding the flow of pressurized fluid together define a means for selectively: a) causing delivery of pressurized fluid from the supply thereof to cause the plunger assembly to exert a compressive force upon a connector **12** in the receptacle **44**; and b) blocking delivery of pressurized fluid from the supply thereof in a manner whereby the plunger assembly does not exert a compressive force on a connector **12** in the receptacle **44**. The valve element **90** is moveable guidingly within a passage **92** along a second line, as indicated by the double-headed arrow **94** in FIG. 6. The line of movement of the valve element **90**, indicated by the arrow **94**, is substantially parallel to, but spaced from, the line of movement of the plunger **64**, as indicated by the arrow **66**. The valve element **90** is repositionable between a flow blocking position, as shown in FIGS. 5 and 7, and a flow passage position, as shown in FIGS. 6 and 8. The valve element **90** is repositioned through an exposed part **96** of the operator/valve assembly **88** that is in the form of a translatable trigger. The trigger **96** is repositionable from a first position, as shown in FIGS. 5 and 7, towards a second position, as shown in FIGS. 6 and 8, to change the valve element **90** respectively from its flow blocking position into its flow passage position. In this embodiment, the trigger **96** moves as one piece with the valve element **90**.

The frame **20** has a grasping portion at **98** that can be gripped by one hand **H** of a user to hold the tool for operation, as shown in FIG. 6. The trigger **96** is operable by a finger **F** of a user on the hand **H** that is gripping the grasping portion **98** of the frame **20**.

The container **86** has a cylindrical outer wall **100** with a central axis **102** that is transverse, and substantially orthogonal, to the lines of movement of the plunger **64** and valve element **90**. The hand **H** of the user gripping the grasping portion **98** of the frame **20** can be extended additionally around at least a portion of the cylindrical outer wall **100** of the container **86** to establish a firmer and more comfortable hold on the tool **10**.

As seen most clearly in FIGS. 3-6, the frame **20** and attached container **86** cooperatively define an "L" shape that can be conveniently grasped and transported by the user with a single hand situated as shown in FIG. 6. The tool **10** preferably has a size and weight to be conveniently held by, and transported in, the hand(s) of a user.

The flow of the pressurized operating fluid will now be described with the tool **10** in its multiple different states. With the container **86** attached to the frame **20**, pressurized fluid in the container **86** communicates through a needle conduit **104** to a frame inlet port **106**. With the trigger **96** in the first position of FIGS. 5 and 7, pressurized fluid is confined in an annular space **108**, formed by an undercut **109**, between the valve element **90** and a wall surface **110** bounding the passage **92**. In this state, the plunger **64** is biased by the coil spring **78** to its first position shown in FIGS. 5 and 7.

By translating the trigger **96** to its second position, as shown in FIGS. 6 and 8, the inlet port **106** aligns axially with

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a feeder passage **112**, on the valve element **90**, that communicates the pressurized fluid radially to a blind bore **114** in the valve element **90**. The blind bore **114** defines a main passage with a center that is substantially coincident with a central axis **116** (FIG. 7) that is common to both the valve element **90** and passage **92**.

In this configuration, a fluid flow path is defined in the direction of the arrows **A** continuously to and from the inlet port **106** to against a force applying end **118** of the plunger **64**. More particularly, the fluid flow path extends through the feeder passage **112**, the main passage **114** and a portion of the passage **92**. The flow path continues therefrom into a reduced diameter passage portion consisting of a first leg **122** extending along the axis **116** from the passage **92**, a transverse leg **124**, and a return leg **126** that communicates with the chamber **68**. Fluid under pressure in the leg **126** exerts a force upon the force applying end **118** of the plunger **64**. As the plunger **64** shifts, a sub-chamber **128**, of increasing volume, is formed in which pressure buildup occurs. This pressure buildup effects the shifting of the plunger **64** from its first position into its second position against the force of the coil spring **78**.

In the embodiment shown, a coil spring **130** surrounds a reduced diameter portion **132** at the axial end **134** of the valve element **90** and acts between a shoulder **136** at the end of the valve element **90** and a facing surface **138** at the axial end of the chamber **92**. This coil spring **130** normally biases the valve element **90** into its flow blocking position, as shown in FIGS. 7 and 9.

In the flow blocking position of FIGS. 7 and 9, a separate feeder passage **140**, spaced axially from the feeder passage **112**, aligns axially over an exhaust passage **142** that communicates to an outlet **144** on the frame **20**. Fluid pressure buildup in the flow path/passage **92** is relieved by communicating fluid in the direction of the arrows **B** in FIG. 7 through the main passage **114**, the feeder passage **140** and the exhaust passage **142** and to and from the outlet **144**.

A series of seated, sealing O-rings **146** surrounds the valve element **90** and is each captive between the valve element **90** and wall surface **110** bounding the passage **92** to prevent axial communication of fluid, from a location radially outside of the valve element **90**, between the feeder passages **112**, **140** and annular space **108**. The O-rings **146** also prevent axial passage of fluid between the valve element **90** and wall surface **110** at the axial ends **134**, **148** thereof within the passage **92**.

A bushing **150** is pressed into the frame **20** in surrounding relationship with the trigger **96** and abuts the valve element end **148** to limit axial shifting thereof in the direction of the arrow **152** relative to the frame **20** under the force of the spring **130**.

To facilitate connection and disconnection of the container **86**, an adapter **154** is provided. The adapter **154** defines a stepped diameter connector part **156** with external threads **158**. The adapter **154** fits within a complementarily-shaped stepped bore **160** in the frame **20** that defines a connector part **161** to cooperate with the connector part **156**. The connector part **161** has internal threads **162** to mate with the external threads **158** on the adapter **154**. By relatively turning the container **86** and frame **20** around the axis **102**, threads on the container **86** and frame **20** can be selectively engaged and disengaged to thereby selectively attach and separate the container **86**.

The frame **20** also includes a mounting plate **164** through which the frame **20** can be secured to a support **166** (FIG. 3), if portability is not required or desired. That is, the tool **10** can be operated with the tool **10** fixed relative to the support **166**.

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The mounting plate **164** has bores **168** to accept conventional fasteners **170** that can be directed therethrough into the support **166**.

With the structure described above, the following method can be carried out to attach the connector **12** to the cable **14**. As seen in FIG. **10** at block **172**, a tool is provided having a frame and an operating mechanism that is operable by a pressurized fluid. As shown at block **174**, the tool is held in the user's hand or hands. As shown at block **176**, a connector is placed in the installation position within the frame receptacle. As shown at block **178**, a part of the cable is placed in an operative position with respect to the connector. As shown at block **180**, the grasping portion of the frame is gripped by a user's hand. As shown at block **182**, the trigger is repositioned with the finger on the user's one hand that is gripping the grasping portion of the frame to thereby cause delivery of pressurized fluid that causes a plunger to relatively move the first and second connector parts from the pre-assembly relationship into the assembled relationship.

The tool **10** can be designed, by those skilled in this art, to produce the compressive force necessary for a particular application. The fluid may be controllably delivered with a variable pressure through the valve assembly **88** or another control (not shown). Alternatively, the tool **10** may be operated to produce fluid pressure at one or more predetermined, selected levels to consistently and predictably attach the connectors **12**.

The foregoing disclosure of specific embodiments is intended to be illustrative of the broad concepts comprehended by the invention.

What is claimed is:

1. A tool comprising:

a frame defining a receptacle configured to hold a coaxial cable connector, the coaxial cable connector extending along an axis when held by the receptacle, the frame configured to support part of a cable which is connectable to the coaxial cable connector, the coaxial cable connector having first and second parts which are movable relative to each other along the axis between: i) a pre-assembled relationship; and ii) an assembled relationship, the receptacle having an axial stop configured to maintain a fixed axial position of the first part while the second part is moved relative to the first part; and an operating mechanism comprising a plunger that is movable along the axis between a first position and a second position to thereby reposition the first and second parts of the coaxial cable connector from the pre-assembled relationship to the assembled relationship, wherein the operating mechanism is configured to be actuated by a fluid.

2. The tool of claim **1**, wherein the operating mechanism comprises at least one fluid passage, the tool comprising a container in fluid communication with the fluid passage.

3. The tool of claim **2**, wherein the container is configured to be removably attached to the frame.

4. The tool of claim **1**, wherein the operating mechanism comprises at least one fluid passage configured to hold the fluid, wherein the fluid is selected from the group consisting of: (a) pressurized, liquid fluid; and (b) pressurized, gas fluid.

5. The tool of claim **1**, wherein the frame is configured to be coupled to the operating mechanism, the frame defining a space configured to hold the coaxial cable connector so that the cable connector extends along the axis, the frame comprising:

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(a) a first wall defining a first opening configured to receive the plunger, the first opening enabling the plunger to reach the space when the frame is coupled to the operating mechanism;

(b) a second wall apart from the first wall, the space being located between the first and second walls, the second wall defining a second opening configured to receive the cable so that:

(i) a first section of the part of the cable is positioned within the space, the first section extending along the axis; and

(ii) a second section of the part of the cable is positioned outside of the space.

6. The tool of claim **1**, wherein the operating mechanism comprises a fluid passage and a valve assembly that controls passage of the fluid from a pressurized supply of the fluid into the fluid passage, the passage being operable to cause a force applied to the plunger.

7. The tool of claim **5**, wherein the operating mechanism is configured to cause the plunger to move through the first opening along the axis and into the space so that the plunger compresses the first and second parts toward each other, the compression causing the coaxial cable connector to be connected to the first section of the coaxial cable.

8. The tool of claim **5**, wherein the second opening comprises a U-shape.

9. The tool of claim **5**, wherein: (a) the frame comprises a lower wall between the first and second walls; and (b) the second wall of the frame comprises a cable support.

10. The tool of claim **1**, wherein the receptacle comprises a first wall and a second wall located apart from the first wall, a portion of the second wall defining a U-shaped opening, the portion comprising the axial stop.

11. The tool of claim **1**, wherein the part of the cable is connected to the coaxial cable connector, the receptacle comprising a bottom wall, a plurality of side walls, a first end structure and a second end structure, wherein the space is bound by the bottom wall, the side walls, and the first and second end structures, the first end structure defining a first opening, the second end structure comprising the axial stop, the second end structure defining a second opening, the second opening configured to receive the part of the cable when the part is lowered into the receptacle while the cable is connected to the coaxial cable connector, the second opening configured to receive the part of the cable after the part is lowered into the receptacle to enable the part of the cable to protrude sideways from the receptacle during operation of the operating mechanism.

12. A tool comprising:

a frame defining a space configured to hold a coaxial cable connector so that the coaxial cable connector extends along an axis within the space, the frame configured to support part of a cable that is connected to the coaxial cable connector, the coaxial cable connector having first and second parts that are movable relative to each other along the axis between: i) an initial relationship; and ii) a final relationship, the frame comprising a portion configured to maintain an axial position of the first part relative to the frame while the second part is moved relative to the first part, the frame defining:

(a) a first opening configured to provide access to the space; and

(b) a second opening positioned so that the space is between the first and second openings, the second opening configured to receive the part of the cable so that a first section of the part of the cable is positioned

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within the space while a second section of the part of the cable is positioned outside of the space; and an operating mechanism comprising at least one fluid passage and a plunger, the plunger configured to move through the first opening along the axis between a first position and a second position to thereby reposition the first and second parts of the coaxial cable connector from the initial relationship to the final relationship, wherein the operating mechanism is configured to be actuated by a fluid.

13. The tool of claim 12, wherein the at least one fluid passage is configured to hold the fluid, wherein the fluid is selected from the group consisting of: (a) pressurized, liquid fluid; and (b) pressurized, gas fluid.

14. The tool of claim 12, wherein the frame comprises:

- (a) a bottom wall;
- (b) a first end structure defining the first opening; and
- (c) a second end structure apart from the first end structure, the space being at least partially bound by the bottom wall, the first end structure, and the second end structure, the second end structure comprising a coaxial cable support defining the second opening, the second opening being configured to receive the first section of the cable when the first section is lowered into the space while the cable is connected to the coaxial cable connec-

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tor, the second opening further configured to receive the second section of the cable after the first section is lowered into the space to enable the second section of the cable to protrude sideways from the frame during operation of the operating mechanism.

15. The tool of claim 14, wherein the second end structure defines a U-shape, and the second opening has a U-shaped configuration.

16. The tool of claim 12, wherein the frame comprises a bottom wall, a plurality of side walls, a first end structure and a second end structure, wherein the space is at least partially bound by the bottom wall, the side walls, and the first and second end structures, the first end structure defining the first opening, the second end structure comprising the portion of the frame configured to maintain the axial position, the second end structure defining the second opening, the second opening configured to receive the first section of the cable when the first section is lowered into the space while the cable is connected to the coaxial cable connector, the second opening further configured to receive the second section of the cable after the first section is lowered into the space to enable the second section of the cable to protrude sideways from the frame during operation of the operating mechanism.

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